

Menu of Mitigation Strategies

Flood

Prevention

- ◆ Planning and zoning
- ◆ Floodplain open space preservation
- ◆ Building construction regulations
- ◆ Regulation of other facilities (critical)
- ◆ Stormwater management

Property Protection

- ◆ Relocation
- ◆ Acquisition
- ◆ Building elevation
- ◆ Floodproofing
- ◆ Lifeline protection
- ◆ Flood insurance

Natural Resource Protection

- ◆ Wetlands protection
- ◆ Erosion and sediment control

Emergency Services

- ◆ Flood threat recognition
 - ◆ Warning dissemination
 - ◆ Flood response
 - ◆ Critical facilities protection
 - ◆ Health and safety maintenance
- Post-disaster recovery and mitigation

Structural Projects

- ◆ Reservoirs/impoundments
- ◆ Levees
- ◆ Diversions
- ◆ Channel and drainage modifications
- ◆ Channel and basin maintenance

Earthquake

Prevention

- ◆ Planning and zoning
- ◆ Building construction regulations
- ◆ Regulation of other facilities (critical)

Property protection

- ◆ Non-structural methods
- ◆ Retrofit upgrades
- ◆ Earthquake insurance

Natural Resource Protection

- ◆ Identified fault rupture zones
- ◆ Identified secondary impact

Emergency Services

- ◆ Earthquake threat recognition
- ◆ Emergency planning for secondary impact
- ◆ Emergency response (mutual aid, CERT)
- ◆ Critical facilities protection
- ◆ Health and safety maintenance
- ◆ Post-disaster recovery and mitigation

Structural Projects

- ◆ Rebuild or retrofit critical facilities
higher seismic code
- ◆ Rebuild or retrofit infrastructure
higher seismic code

Flood (continued)

Public Information

- ◆ Flood hazard maps
- ◆ Map information
- ◆ Outreach projects
- ◆ Real estate disclosure
- ◆ Library
- ◆ Technical Assistance
- ◆ Environmental education

Dam Failure

Prevention

- ◆ Dam failure inundation maps
- ◆ Planning, zoning, open space preservation in risk area
- ◆ Building codes with elevation based on dam failure
- ◆ Dam safety inspections
- ◆ Rigorous dam maintenance schedule
- ◆ Draining dam when conditions are unsafe

Property Protection

- ◆ Acquisition of structures in inundation path
- ◆ Flood Insurance

Earthquake (continued)

Public Information

- ◆ Seismic maps; liquefaction, faults, zones
- ◆ Map information
- ◆ Outreach projects
- ◆ Real estate disclosure
- ◆ Library
- ◆ Technical Assistance
- ◆ Education

Wildfire

Prevention

- ◆ Zoning ordinances to reflect fire risk zones
- ◆ Restrict development areas near fire protection and water resources
- ◆ Planning to include: spacing of buildings, firebreaks, on-site water storage, wide roads, multiple accesses
- ◆ Code standards for roof materials and fire protection systems
- ◆ Maintenance programs to clear dead and dry bush
- ◆ Regulations on open fires
- ◆ Open space around structures

Property Protection

- ◆ Retrofitting roofs, add spark arrestors
- ◆ Create and maintain defensible space
- ◆ Insurance
- ◆ Eliminate ladder fuels

Dam Failure (continued)

Natural Resource Protection

- ◆ Prohibit development in high-risk areas

Emergency Services

- ◆ Monitor condition dam
- ◆ Warning and evacuation plans based on dam failure
- ◆ Develop and conduct dam failure emergency exercise

Structural Projects

- ◆ Dam improvements, spillway enlargements
- ◆ Remove unsafe dams

Public Information

- ◆ Develop outreach materials on dams, dam failure and community emergency plan for dam failure

Wildfire (continued)

Property Protection (continued)

- ◆ Install sprinkling systems
- ◆ Develop fire resistant plans
- ◆ Have home addresses displayed
- ◆ Clean out rain gutter

Natural Resource Protection

- ◆ Prohibit development in high-risk areas
- ◆ Understand impact of non-native vegetation
- ◆ Promote tread soft ATV use
- ◆ Develop watershed management plan
- ◆ Maintain watershed
- ◆ Establish and promote fuel reduction

Emergency Services

- ◆ Mutual aid agreements for fire fighting
- ◆ Participate in State Wildfire Suppression Fund
- ◆ Develop and exercise local wildfire response plan and evacuation plans

Structural Projects

- ◆ Construct wildfire fuel breaks
- ◆ Install heliport water stations
- ◆ Tree and underbrush thinning in critical areas
- ◆ Increase number of fire hydrants
- ◆ Install water tanks

Public Information

- ◆ Develop maps for wildfire hazard areas
- ◆ Wildfire information mailout to high risk residents
- ◆ Develop urban wildfire “how to protect your home from wildfires” book
- ◆ Newspaper article on wild fires

Dam Failure (continued)

Landslides

Prevention

- ◆ Monitor and evaluate areas after wildfire
- ◆ Install ground monitoring instruments on landslides for movement
- ◆ Restrict development in landslide-prone areas
- ◆ Establish codes (grading, construction, excavation), in landslide-prone areas

Property Protection

- ◆ Control and monitor surface and groundwater drainage
- ◆ Control building in areas of landslides
- ◆ Evaluate property maintenance in areas of landslides (over watering)

Natural Resource Protection

- ◆ Complete a watershed management plan
- ◆ Limit use of ATVs in areas of landslides to manage erosion
- ◆ Evaluate impact of wildfire in areas of landslides
- ◆ Restrict development in landslide-prone areas
- ◆ Maintain natural vegetation

Emergency Services

- ◆ Monitor and warning systems
- ◆ Evacuation plans and exercises

Wildfire (continued)

Public Information (continued)

- ◆ Presentation on wildfires at community meetings
- ◆ Develop wildfire displays for display in public building
- ◆ Real estate disclosure of high hazard wild fire area

Severe Weather

Prevention

- ◆ Early warning and notification systems
- ◆ Building codes to address wind and snow load
- ◆ Properly ground structures for lightning
- ◆ Public education for severe weather conditions
- ◆ Restrict development in areas of avalanche

Property Protection

- ◆ Structural tie down of roofs for high winds
- ◆ Restrict development in areas of avalanche
- ◆ Monitor NWS weather warnings and watches

Natural Resource Protection

- ◆ Evaluate impact of severe weather
- ◆ Restrict development in areas of avalanche

Emergency Services

- ◆ Monitor NWS weather warnings and watches
- ◆ Develop plans and exercises for severe weather related incidents

Landslides (continued)

Structural Projects (continued)

- ◆ Build buttress, retaining walls other engineered structures
- ◆ Install subsurface drainage materials
- ◆ Remove landslide materials

Public Information

- ◆ Updated maps of landslide areas
- ◆ Real estate disclosure
- ◆ Develop outreach material (newsletters, articles, displays)
- ◆ Notice to homeowners in landslide areas detailing hazard

Drought

Prevention

- ◆ Establish economic incentives for water conservation
- ◆ Encourage water conservation
- ◆ Develop early warning system, monitoring
- ◆ Implement water metering and leak detection programs
- ◆ Develop early warning system, monitoring program

Property Protection

- ◆ Evaluate potential for wildfire due to drought
- ◆ Identify secondary affects from drought

Natural Resource Protection

- ◆ Legislation to protect stream flows
- ◆ Protect water aquifers

Emergency Services

- ◆ Alert procedures for water quality issues
- ◆ Create inventory of pumps, filters, other equipment

Severe Weather (continued)

Structural Projects (continued)

- ◆ Install sheds over roads below avalanche terrain
- ◆ Install drift fences along snow drift areas
- ◆ Install avalanche fencing along ridgelines for
- ◆ Wind blown snow

Public Information

- ◆ Develop outreach document on avalanche safety
- ◆ Become and NWS Storm Ready Community
- ◆ Promote lightning safety week
- ◆ Develop cold weather safety materials

Problem Soils

Prevention

- ◆ Planning and zoning restrictions and regulations
- ◆ Open space
- ◆ Building codes
- ◆ Drain system maintenance

Property Protection

- ◆ Insurance
- ◆ Remove soil
- ◆ Ensure rain gutters extend away for structures

Natural Resource Protection

- ◆ Leave area as open space

Emergency Services

- ◆ Identify structures impacted by problem soils

Drought (continued)

Emergency Services (continued)

- ◆ Establish water hauling program
- ◆ List livestock watering locations
- ◆ Establish hay hotline
- ◆ Fund water system improvements (wells, systems)
- ◆ Lower well intakes
- ◆ Develop drought contingency plan
- ◆ Issue emergency permits for water use

Structural Projects

- ◆ Redesign or create new reservoir storage
- ◆ Provide pumps and piping for distribution

Public Information

- ◆ Develop drought education material
- ◆ Water conservation outreach material
- ◆ Other outreach for awareness

Problem Soils (continued)

Emergency Services (continued)

- ◆ Presoak and/or compact soils
- ◆ Install drain fields
- ◆ Bring in fill
- ◆ Remove soils
- ◆ Bring in fill

Public Information

- ◆ Develop information on problem soils
- ◆ Outreach materials on problem soil mitigation